Benefits of beach restoration projects typically fall under two categories — (1) storm damage reduction and (2) beach visitation. While methods of determining the storm damage reduction benefits are well understood by coastal engineers, methods for calculating beach visitation benefits often vary from project to project or are excluded from cost-benefit analyses due to lack of pertinent beach user survey information.

Since 2007, Taylor Engineering, with assistance from William T. Hunt (former U.S. Army Corps of Engineers [USACE] economist), has assisted the Texas General Land Office (GLO) with evaluations of the economic and natural resources benefits — including beach visitation benefits — derived from erosion response projects constructed with funding allocations from the Texas Coastal Erosion Planning and Response Act (CEPRA). The Texas Legislature requires the GLO to report the above benefits for representative CEPRA construction projects every biennium. For past studies (2007 – 2013), Taylor Engineering evaluated beach visitation benefits under two categories — spending by out-of-state visitors and recreational enjoyment by all visitors — as described below. These evaluations largely relied on beach user survey data collected by the University of Texas in 2004 and 2005. For the most recent study conducted in 2015, Taylor Engineering conducted a literature review of recent beach user surveys and beach visitation benefits evaluations conducted within the U.S. and prepared and implemented a new beach user survey.

Evaluation of with- and without-project out-of-state visitor spending requires knowing annual out-of-state visitation, out-of-state visitor spending, and how the with- and without-project conditions affect beach width, and hence potential capacity, for each year in the period of analysis. The above-mentioned beach user surveys conducted in 2004 and 2005 provided data regarding out-of-state visitation by percentage of the total beachgoer population, total number of peak day visitors, and spending for various beach sites throughout Texas based on site-specific beachgoer surveys. Other factors to consider include effects to beach visitation with respect to beach width “elasticity,” which measures the percentage change in annual visitation given a percentage change in beach width. In addition, ensuring the projected beachgoer population through the period of analysis would not exceed the beach’s capacity in any given year required estimating the maximum number of visitors per day the beach could accommodate. Studies by the USACE and Florida Department of Environmental Protection have determined that the average person needs 100 square feet (sf) of dry beach for normal beach activity. The available dry beach surface area divided by 100 sf and multiplied by 2 (estimated average daily turnover rate) yielded this number. Multiplying this result by 365 days produced an estimated maximum annual number of beach visitors for each area. Calculating the beachgoer population each year (adjusted for beach narrowing) and multiplying by the out-of-state spending and a spending multiplier effect, accounting for secondary spending effects, produces the value for any given year.

Estimating the recreation value for all visitors requires knowing the total annual beach visitation with and without the project and the unit day value (UDV). The UDV method, practiced by the USACE, relies on expert or informed opinion and judgment to approximate the average “willingness to pay” of visitors (per person per visit) to recreational project sites. The UDV method assigns points to general recreation based on five criteria: (1) recreation experience, (2) availability of opportunity, (3) carrying capacity, (4) accessibility, and (5) environmental. One rates an individual site based on a total of 100 points. Available USACE documents present guidelines for assigning points and procedures for converting points to dollar values for general recreation. Applying the beachgoer population for with- and without-project conditions each year, multiplying by the appropriate UDV, and then taking the difference produces the estimated benefit for any given year. Adjusting these values for inflation and discounting, and summing yields the total benefit over the period of analysis.

Applying these methods for valuation of recreational beach use in combination with evaluation of storm damage reduction benefits allows a comprehensive evaluation of the economic benefits of beach restoration.